

Problem 1

Goat, head of cabbage and wolf

A peasant bought a goat, a head of cabbage and a wolf on the market. On the way home he had to cross the river. The peasant had a small boat, in which besides him only one of his purchases could fit.

Question: How can he transport all goods across the river, if he can't leave the goat alone with the cabbage and the wolf alone with the goat?

Problem 2

Family

A father, a mother, and two children — a son and a daughter — must cross the river. A fisherman happened to pass nearby who could lend them his boat. However, only one adult or two children can fit in the boat.

Question: How can a family cross the river and return the boat to the fisherman?

Problem 3

Missionaries and cannibals

Three missionaries and three cannibals must cross the river. They have one boat in which only two are accommodated. To avoid tragedy, you cannot leave more cannibals together than missionaries.

Question: How to cross a river?

Problem 4

Monkeys

Three people, one large and two small monkeys must cross the river. There is one boat that can fit no more than two of monkeys or people. Only humans and the big monkey can row. It is impossible to leave together more monkey than the people, otherwise the monkeys will devour people. Monkeys can jump ashore when the boat approaches the land.

Question: How do they cross the river?

Problem 5

Tourists and the lantern

Four tourists need to cross the bridge at night. They have only one lantern, without which it is impossible to cross the bridge, in addition, the bridge is so old that it can hold no more than two people. It is known that the first of the tourists crosses the bridge in 1 minute, the second in 2, the third in 5 and the fourth in 10 minutes. Moreover, if two of them go at the same time, then they move at the speed of the slower of them.

Question: In what minimum time can all four tourists cross the bridge?

Problem 6

Climber

The climber needs to descend from a sheer cliff 100 meters high. He has one rope 75 meters long. In addition, on the edge of the cliff and on the cliff itself, at a height of 50 m, a tree is growing to which the rope can be tied. The climber can cut the rope and tie it together.

Question: How should he act to descend from a cliff without damage?

Problem 7

Camel in the desert. Part 1.

A camel must pass through the desert to the nearest city, which is located at a distance of 1000 km. At the beginning of the journey, he has 2000 liters of water and he can carry no more than 1000 liters of water. For every kilometer traveled, he drinks one liter of water. A camel can leave any amount of water in the desert and then take it.

Question: How much water can he transfer to the city?

Problem 8

Camel in the desert. Part 2.

A camel must pass through the desert to the nearest city, which is located at a distance of 1000 km. At the beginning of the journey, he has 3,000 liters of water and he can carry no more than 1,000 liters of water. For every kilometer traveled, he drinks one liter of water. A camel can leave any amount of water in the desert and then take it.

Question: How much water can he transfer to the city?

Problem 9

Tourists and the bike. Part 1.

Two tourists need to cross the bridge. It is known that first of the tourists crosses the bridge in 3, the second in 5. In addition, they have a bike that allows any of the tourists to cross the bridge in 1 minute.

Question: In what minimum time can both tourists cross the bridge?

Problem 10

Tourists and the bike. Part 2.

Three tourists need to cross the bridge. It is known that first of the tourists crosses the bridge in 3, the second in 5 and the third in 10 minutes. In addition, they have a bike that allows any of the tourists to cross the bridge in 1 minute.

Question: In what minimum time can all three tourists cross the bridge?